

Appendix 11.11: Lesser Silver Water Beetle Survey



THE
ENVIRONMENT
PARTNERSHIP



LAND NORTH OF BRYN LANE WREXHAM LESSER SILVER WATER BEETLE SURVEY

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Land North of Bryn Lane, Wrexham

Lesser Silver Water Beetle Survey

2023



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Client Net World Sports

Project Title Land North of Bryn Lane, Wrexham

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Executive Summary

Development Details

The client is proposing commercial development at land north of Bryn Lane, Wrexham, hereafter referred to as the 'site'.

This report describes the outcome of a targeted survey for Lesser Silver Water Beetle *Hydrocahara caraboides*. Recommendations are provided so that the development is compliant with biodiversity policy and legislation.

Ecological Interest

No evidence of Lesser Silver Water Beetle was found in any of the ponds surveyed.

Outcomes

No further survey work is required. No mitigation is required.



1. Introduction

1.1 Project Brief

- 1.1.1 Rachel Hacking Ecology Limited was commissioned in 2023 by Net World Sports, via The Environment Partnership (TEP), to undertake a Lesser Silver Water Beetle *Hydrochara caraboides* survey at a series of ponds on land north of Bryn Lane, Wrexham (hereafter referred to as 'the site'). Ecological surveys are required to support an Environmental Statement that will inform proposals for a commercial development.
- 1.1.2 The site (central grid reference SJ 38614 51101) is approximately 37.21 ha in size and is located to the east of Wrexham in North Wales (see Figure 1). The site is bounded to the south by Bryn Lane and Wrexham Industrial Estate, to the north by Francis Lane, to the west by both Industrial Estate Road and Hugmore Lane (with associated residential properties), and to the east by open agricultural fields. The wider area predominantly comprises urban development to the west associated with Wrexham town centre, with open countryside present to the north and east and the industrial estate to the south.

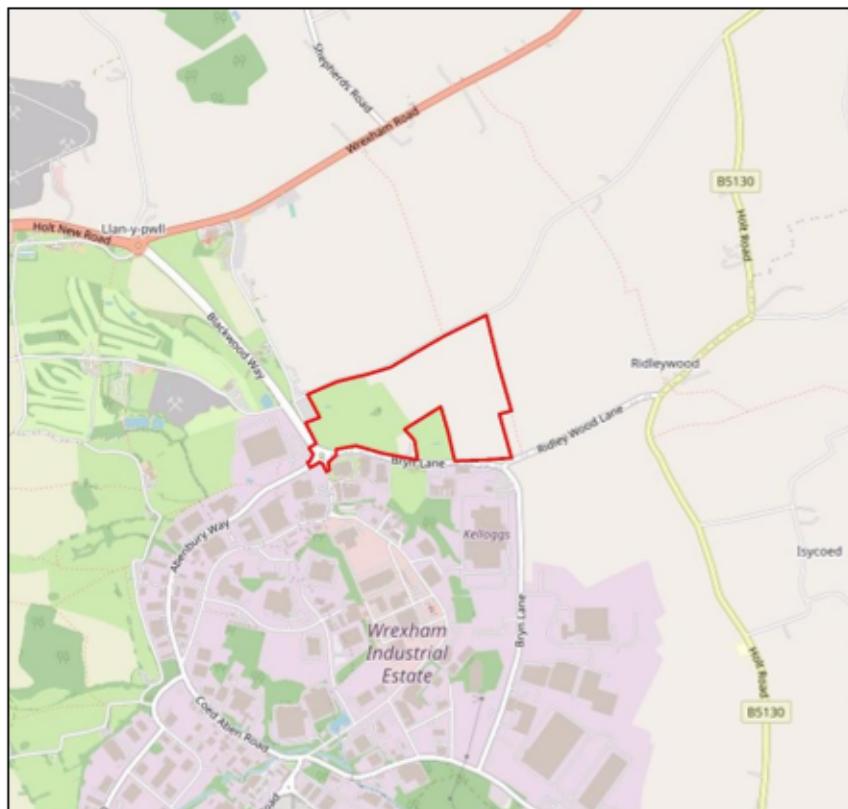


Figure 1. Map showing the location of the site courtesy of © OpenStreetMap Contributors

Description of Development

1.1.3 The Proposed Scheme is in the form of a hybrid planning application, comprising:

- Detailed Component:
 1. Demolition of existing buildings, site clearance and preparation works, including removal of vegetation and reprofiling of topsoil, where necessary;
 2. Construction of a new warehouse unit, providing 33,595 sqm Gross External Area (GEA) for B1c (light industry appropriate in a residential area), B2 (general industrial) and B8 (storage & distribution) uses (Unit 2);
 3. Construction of 8 new smaller units (Units 3-7; 14-16), providing a total of 29,659 sqm GEA for B1c (light industry appropriate in a residential area), B2 (general industrial) and B8 (storage & distribution) uses;
- Outline Component:
 1. Construction of up to 72,635 sqm GEA for employment uses (B1c (light industry appropriate in a residential area), B2 (general industrial) and B8 (storage & distribution) uses), ancillary retail/drive thru facilities and potential for a hotel and petrol filling station (A1, A3, C1 or sui generis). The overall quantum of A1, A3, C1 or sui generis use would not exceed 16,150 sqm GEA;
 2. The proposed buildings will be up to 28.5m in height above ground level.

1.2 Scope of Work

1.2.1 The Client commissioned Rachel Hacking Ecology to carry out the following works:

- Carry out targeted surveys to determine presence/likely absence of Lesser Silver Water Beetle (LSWB).
- Design suitable mitigation where necessary.

1.3 Site Visit Information

Survey Details

- 1.3.1 Andy Harmer undertook the survey. Andy co-authored the English Nature LSBW guidelines (Webb, 2006). He has held successive LSBW licences and has taught professional courses on LSBW law, licensing and surveying.
- 1.3.2 The first survey of the ponds was undertaken on 22nd May 2023. The second survey was undertaken on 17th July 2023.

Weather

- 1.3.3 The weather on both visits was sunny, dry and calm.

2. Methods

2.1 Field Survey

Habitat Requirements

- 2.1.1 LSWB has known favourable ecological preferences/parameters in Cheshire and Wrexham (Webb, J., 2006; Harmer, A., 2006). Key features for a favourable LSWB pond are a mosaic of shallow fen and pockets of clear open water, cattle poaching, a gently tapered and often extensive drawdown zone exposing mud and a floating raft of vegetation. The pond should have an open aspect (if shading does occur, this is rarely from the pond perimeter, and usually from the central floating raft).
- 2.1.2 LSWB is traditionally encountered with an assemblage of other aquatic macro-invertebrates, plants and amphibians, all of which can favour similar habitat niches as LSWB. The survey methodology, therefore, included searching for and identifying other animals and plants present that may indicate the suitability of the water feature for LSWB. Table 1 indicates the assemblage of species specifically searched for, however the list must be used cautiously as it is the assemblage that is important, not the presence of a single species.

Table 1 – Aquatic flora and fauna encountered with LSWB	
A Leech	<i>Erpobdella testacea</i>
Mud Snail	<i>Omphiscola glabra</i> RDB
Twisted Ramshorn	<i>Bathymorphalus contortus</i>
Ruddy Darter	<i>Sympetrum sanguineum</i>
Emperor Dragonfly	<i>Anax imperator</i>
A Diving Beetle	<i>Hydaticus seminiger</i> Nb
A Diving Beetle	<i>Dytiscus semisulcatus</i>
Liverwort	<i>Ricciocarpus natans</i> Nb
Great Crested Newt	<i>Triturus cristatus</i>

- 2.1.3 There are considered to be two breeding periods for LSWB within the region; May to June and July to August. In some cases, ponds either lose their favourability or gain it within a single season due to water level changes or temporary shading from summer plant growth.
- 2.1.4 Ordinarily, two pond visits would be regarded as appropriate for detecting LSWB as habitat favourability can ebb and flow, meaning that a single visit may miss the optimum window for encountering the beetle. A single visit can be regarded as appropriate if the pond is sub-optimal or LSWB (or evidence) is located on the first visit.

Survey

- 2.1.5 During the first survey visit, all ponds on site were visually assessed for their suitability to support LSWB, searching for the habitat preferences above. The surveyors walked the edges of each pond searching for LSWB egg cocoons. The water, aquatic vegetation and shallow edges were then netted for aquatic macro-invertebrates (including LSWB). The netting stopped when no new species had been encountered for approximately 10 minutes.
- 2.1.6 On the second survey visit, only ponds deemed suitable for LSWB during the first visit were surveyed. The same methodology was used as above.

Identification

- 2.1.7 Aquatic invertebrates encountered were identified in the field where possible. Some specimens were taken away for critical identification by Andy Harmer.



3. Results

3.1 Constraints

- 3.1.1 Field survey results are valid for a limited duration and no investigation can provide a complete description and characterisation of a site. The composition of habitats and species can change depending on environmental variables and the mobility of species, so the results of a study become less reliable over time. In some cases, surveys that are 3 years old may be acceptable for a project assuming that habitats have not significantly changed in the intervening period, but for protected species it is likely that survey data will need to be no more than 18 months old.
- 3.1.2 The ponds were fully accessible and no survey constraints exist.

3.2 Survey

- 3.2.1 There are seven ponds on site (see Appendix 1).

First Visit

- 3.2.2 LSWB was not found at any of the seven ponds on site during the first visit. No 'indicator' species were found. Ponds 1, 2 and 3 supported some areas of suitable LSWB habitat and therefore were the subject of a second visit.

Second Visit

- 3.2.3 LSWB was not found at Ponds 1, 2 and 3 during the second visit. No 'indicator' species were found.

3.3 Pond Descriptions

Pond 1

- 3.3.1 Pond 1 is a roughly circular pond with an extensive shallow zone that had turned to mud by mid-May, with open water in the centre of the pool (see Photographs 1 and 2). A stand of Grey Willow *Salix cinerea* is present on the north-east section of the pond with clear shallow water in amongst its roots.



Photograph 1 showing Pond 1



Photograph 2 showing the margins of Pond 1

- 3.3.2 Both Bulrush *Typha latifolia* and Lesser Bulrush *Typha angustifolia* are present, with Great Willowherb *Epilobium hirsutum*, Soft-rush *Juncus effusus*, Hard Rush *Juncus inflexus* in the margins. Cyperus Sedge *Carex pseudocyperus* and Water-plantain *Alisma plantago-aquatica* occur sparsely. The mud 'doughnut' ring in the outer margins, between the pond perimeter and the inner ridge remains sparsely vegetated even though it appears not to be cattle poached. It is possible that the rapid dessication of this pond annually helps retain this zone, along with wildfowl activity. This zone would be important for LSWB if it were to occur here as it would provide warm shallows in spring followed by a mud pupation zone once the larvae were full grown and the water level had dropped.

- 3.3.3 Pond 1 supports a moderate aquatic invertebrate assemblage, with species of beetle such as *Noterus clavicornis*, *Anacaena limbata* and *Helophorus brevipalpis*, crustaceans such as *Asellus aquaticus*, and water bugs such as *Corixa punctata*, *Sigara lateralis* and *Hesperocorixa sahlbergi*, all of these can be regarded as soft-bodied prey items that the predaceous beetle larvae of LSWB would feed upon.
- 3.3.4 No known LSWB indicator invertebrate species (Table 1) were found amongst the assemblage.
- 3.3.5 This appears to be the only pond within the survey scope that has the suite of habitat characteristics that would suit LSWB, and may improve as the water level drops. As the other ponds within this area are drying, it is possible that LSWB will disperse to this pond and remain if they find the habitat favourable.

Pond 2

- 3.3.6 Pond 2 is a small circular pond open, with a stand of Willow at its centre (see Photographs 3 and 4). The margins support Soft-rush, Hard Rush, Meadowsweet *Filipendula ulmaria* and Common Spike-rush *Eleocharis palustris*. Pink Water-speedwell *Veronica catanata*, Celery-leaved Buttercup *Ranunculus sceleratus* and Bittersweet *Solanum dulcamara* with Water-plantain *Alisma plantago-aquatica* are present towards the centre. Common Duckweed *Lemna minor* and Water-starwort *Callitriche* sp. are also present. No floating raft of vegetation exists nor the warm shallows and fen mosaic associated with LSWB ponds. Pond 2 is considered to be currently sub-optimal for LSWB.



Photograph 3 showing Pond 2



Photograph 4 showing the vegetated margins of Pond 2

- 3.3.7 A small number of aquatic invertebrates were found at Pond 2, the open water beneath the stand of *Salix* supporting the water beetles *Agabus bipustulatus*, *Helophorus grandis* and *Colymbetes fuscus*. The leech *Erpobdella octoculata* was netted along with bugs *Notonecta glauca* and *Hesperocorixa sahlbergi*. Common darter adults were observed at the pond but breeding evidence was not established. *Asellus aquaticus* was also netted.
- 3.3.8 Pond 2 supports a limited diversity of aquatic invertebrates. No indicator species were encountered.

Pond 3

- 3.3.9 This is a small teardrop-shaped pond that has a small amount of open water at its centre (see Photograph 5). Stands of Bulrush and Reed Sweet-grass *Glyceria maxima* dominate most of the pond, with Grey Willow spreading and creating more shade in the northern quarter. The presence of a raised horseshoe-shaped area on the pond perimeter colonised by Common Nettle *Urtica dioica* and Willowherb *Epilobium* species suggests a recent excavation of the pond. This pond, like Ponds 1 and 2, appears to have changed over recent years due to the withdrawal of cattle, though sheep still have access. The water quality of the pond appears to be suffering from the results of wildfowl activity with faeces trampled into the small pool of open water the ponds centre. The open water supported few invertebrates, whereas the boggy margins supported a variety of water beetles, such as *Coccidula rufa*, *Cercyon tristis*, and *Coelostoma orbiculare*. No indicator species were encountered. The pond is not considered suitable to support breeding LSWB at this time.



Photograph 5 showing Pond 3

Ponds 4a and 4b

3.3.10 Ponds 4a and 4b lie within a copse (see Photograph 6). Both ponds are heavily shaded.



Photograph 6 showing Pond 4a and 4b

3.3.11 Pond 4a (see Photograph 7) is covered with Willow carr and Bramble *Rubus fruticosus* agg. The water column was extremely shallow at the time of the survey, with a deep layer of leaf litter. No aquatic vegetation was found. Similarly Pond 4b (see Photograph 8) is also covered with Willow carr. The pond supported a little more water than Pond 4a but this was shallow.



Photograph 7 showing Pond 4a



Photograph 8 showing Pond 4b

- 3.3.12 No indicator species were encountered at either pond. A very low number of aquatic invertebrates were found, as is typical of shaded, shallow ponds. Ponds 4a and 4b offer unsuitable habitat for breeding LSWB.

Ponds 5a and 5b

- 3.3.13 Ponds 5a and 5b lie within dense scrub (see Photograph 9). Both ponds are heavily shaded.



Photograph 9 showing Ponds 5a and 5b

- 3.3.14 Pond 5a (see Photograph 10) is mostly covered with Willow carr, with open margins. The margins support minimal aquatic vegetation which comprises clumps of Hard Rush and Lesser Spearwort *Ranunculus flammula*. The water column was relatively shallow, with a deep layer of leaf litter. Pond 5b (see Photograph 11) is also mostly shaded by dense scrub and comprised mostly mud at the time of the surveys, with pockets of extremely shallow water. A thick layer of leaf litter forms the substrate.



Photograph 10 showing Pond 5a



Photograph 11 showing Pond 5b

- 3.3.15 No indicator species were encountered at either pond. A very low number of aquatic invertebrates were found, typical of shaded, shallow ponds. Similarly to Ponds 4a and 4b, Ponds 5a and 5b offer unsuitable habitat for breeding LSWB.

4. Assessment

- 4.1.1 LSWB was not encountered at any of the ponds within the survey area, nor was any evidence located suggesting their presence. There were no indicator species encountered in any of the ponds.
- 4.1.2 Following the first survey, Ponds 4a, 4b, 5a, and 5b were deemed untypical of ponds favoured by LSWB. This is due to the lack of open, unshaded aspects, warm shallows with emergent vegetation, fen mosaic created by cattle poaching, and diverse and abundant invertebrate assemblages, which make up the diet of the LSWB larvae.
- 4.1.3 Ponds 1, 2 and 3 were deemed the most suitable with regards to LSWB following the first survey visit, and therefore were the subject of a second visit. Following the second visit, Ponds 1, 2 and 3 are considered sub-optimal for LSWB. These three ponds have been kept free of tall vegetation in the margins through poaching and browsing over the years. However, the ponds are now changing due to the removal of cattle. Sheep, thought to be the only livestock that have access to the ponds now, cannot browse the vegetation in the centre of the pond in the same way cattle can, and they do not have the weight to poach the margins in the same way as cattle do. Moreover, lush vegetation has developed which helps to dry the pond faster and removes the fen mosaic and pockets of open water, which is where LSWB construct their floating egg cocoons. The mud zones where the LSWB larvae burrow to pupate are now extremely limited.
- 4.1.4 No protected, rare or uncommon species of invertebrate were found at the ponds and the invertebrate assemblage in all ponds was considered typical of the assemblage found in field ponds in this area and across the Cheshire Plain.
- 4.1.5 The survey was undertaken at an optimum time of year. Given the findings, and the sub-optimal nature of the ponds for LSWB, no further survey visit is considered necessary. No mitigation is required for LSWB at this time.

5. References

English Nature. 1999. UK Biodiversity Group Tranche 2 Action Plans Volume IV – invertebrates.

Foster, G.N. 2010. *A review of the scarce and threatened Coleoptera of Great Britain Part (3): Water beetles of Great Britain. Species Status 1*. Joint Nature Conservation Committee, Peterborough.

Guest, J. 1996. Survey of the Lesser Silver Water beetle *Hydrochara caraboides* in Cheshire. *English Nature Research Report 248*. Peterborough: English Nature.

Harmer, A. 2006. The Lesser Silver Water Beetle *Hydrochara caraboides* in Cheshire; Information leaflet produced by Environment Agency.

Harmer, A & Guest, J. 2002. The Wrexham Pond Pilot Study.

IUCN, 2001. IUCN Red List Categories & Criteria. Version 3.1. Gland, Switzerland: IUCN.

Shirt, D.B. (Ed.). 1987. *British Red Data Books: 2. Insects*. Nature Conservancy Council.

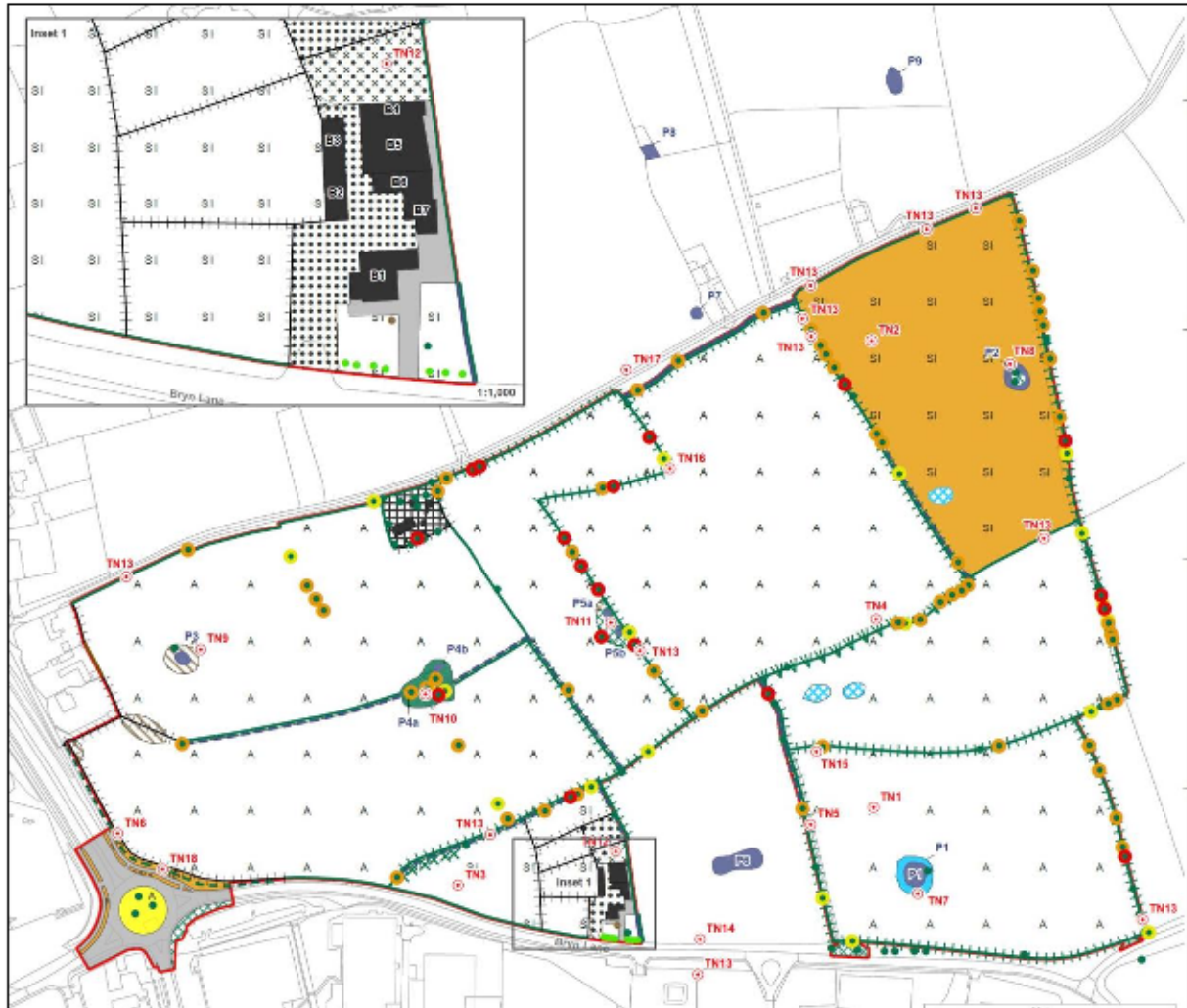
Webb, J., 2006. (Draft Version 6). *Lesser Silver Water Beetle: Guidance Notes for Developers*. Natural England.

Appendix 1: Legislation

Lesser Silver Water Beetle (LSWB) is fully protected under the Wildlife and Countryside Act 1981 (as amended). It is listed under Schedule 5 (Protected Animals) and is protected against, for example, intentionally killing, taking or injuring the species, possessing or controlling the species, damaging or destroying any structure or place that the species uses for protection, disturbing the species while it is occupying a structure or place which it uses for shelter or protection and obstructing access to any structure or place which the species uses for shelter or protection. LSBW is also a Red List species. This means it is considered to occur in 15 or less hectads (or 10km squares) in GB. The most up to date Red List (Foster, 2010) considers the species as 'Near Threatened' (IUCN Guidelines, 2001). It is only known to occur in two counties within England; Somerset and Cheshire, and one county in Wales; Wrexham Borough. LSBW has extremely restricted habitat requirements.



Appendix 2: Pond Location Plan (courtesy of TEP)





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